

Non-Calculator

Q1.

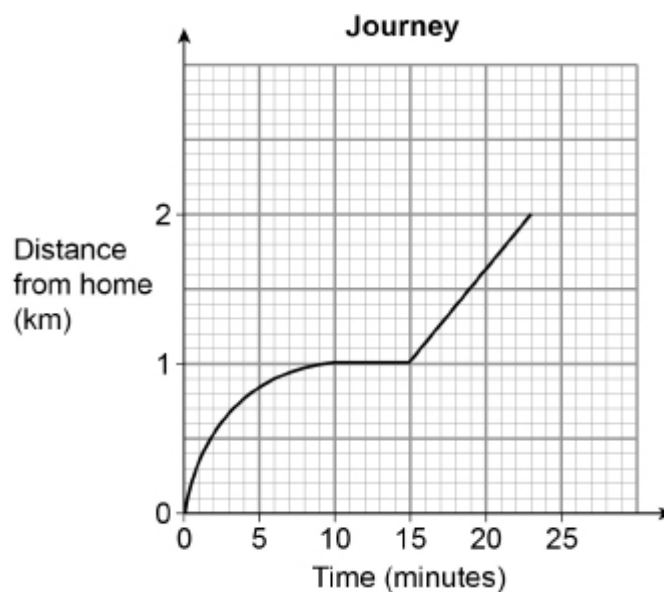
Anil's home is 1 km from a shop.

He walked from home to the shop at a constant speed in 10 minutes.

He stayed at the shop for 5 minutes.

He walked home at a constant speed in 8 minutes.

Anil drew this distance-time graph to represent his journey.



Make **two** criticisms of his graph.

Criticism 1 _____

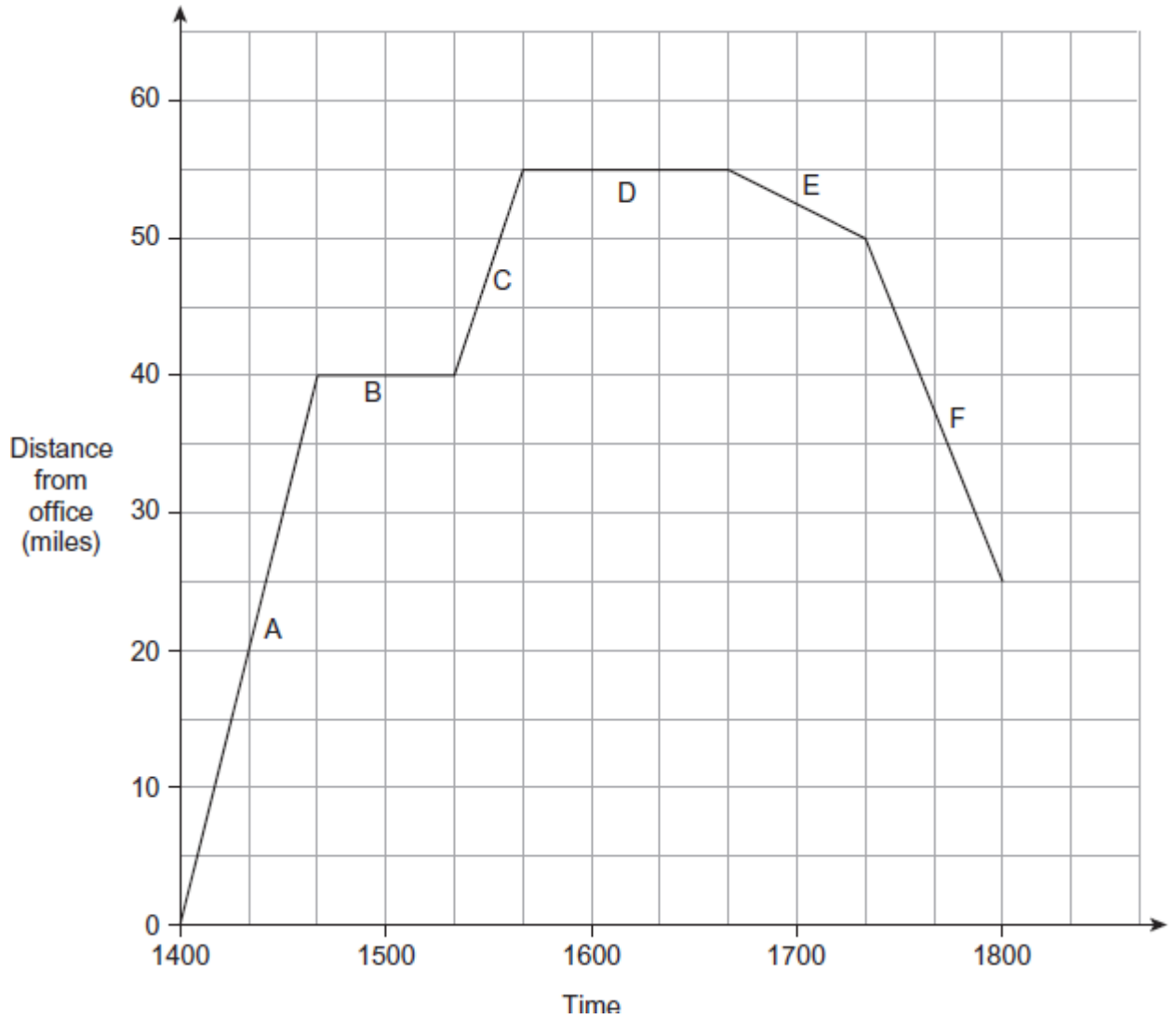
Criticism 2 _____

(Total 2 marks)

Q2.

Ruth left her office at 1400
She drove to two meetings and then drove home.

The distance-time graph shows her journeys.



(a) How many minutes was she stopped altogether?

Answer _____ minutes

(1)

(b) How many miles did she drive altogether?

Answer _____ miles

(1)

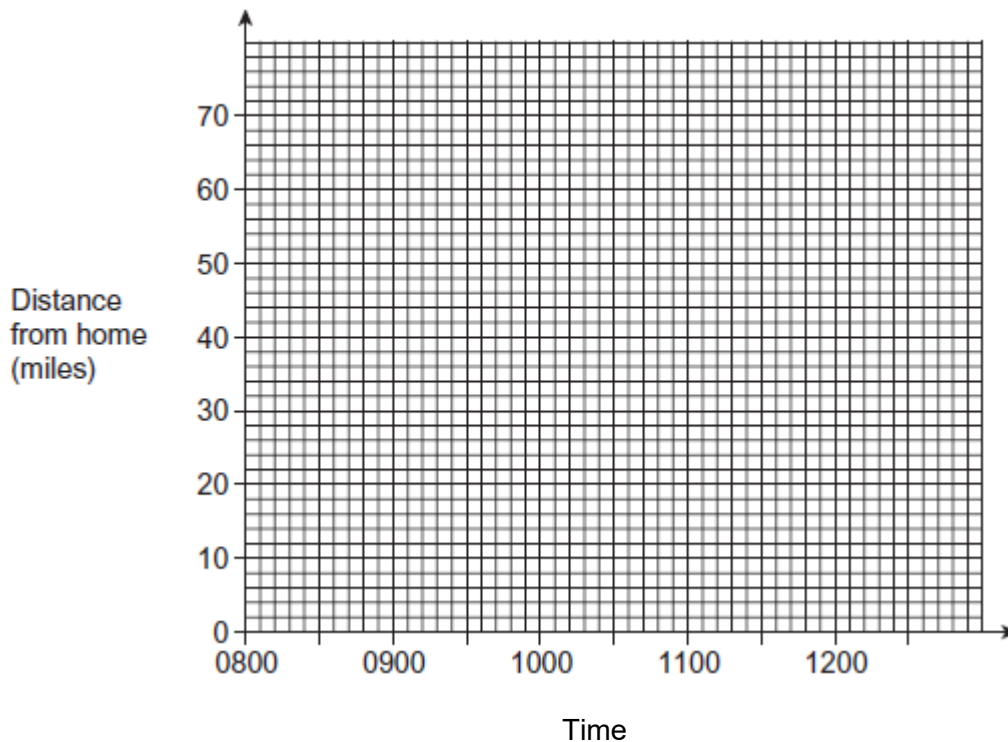
- (c) On which part of the journey was her speed the fastest?
Circle your answer.

A C E F

(1)
(Total 3 marks)

Q3.

Dan leaves home at 0800.
He drives 60 miles from home in the first 90 minutes.
He stops for 30 minutes.
He then drives home at an average speed of 50 mph.



- (a) Draw a distance-time graph to show Dan's journey.

(3)

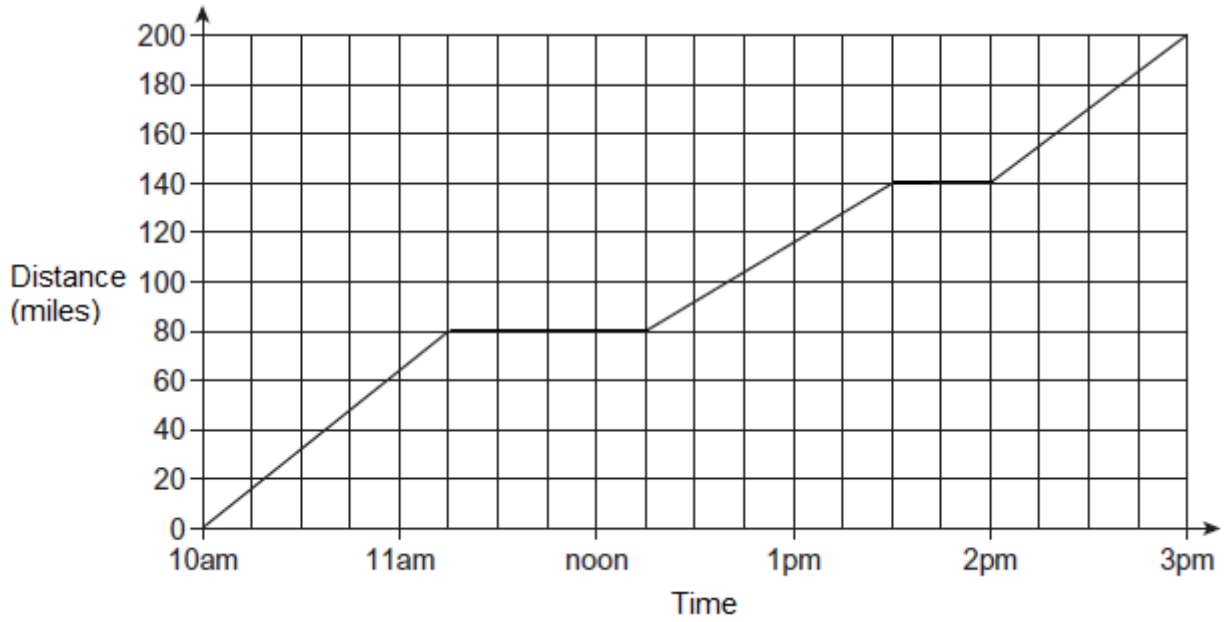
- (b) A TV programme starts at 1130.

Does Dan get home in time for the start?
Show how you decide.

(1)
(Total 4 marks)

Q4.

The distance-time graph represents a journey Alf makes.



Alf claims that he stopped for less than one-quarter of his total journey time.

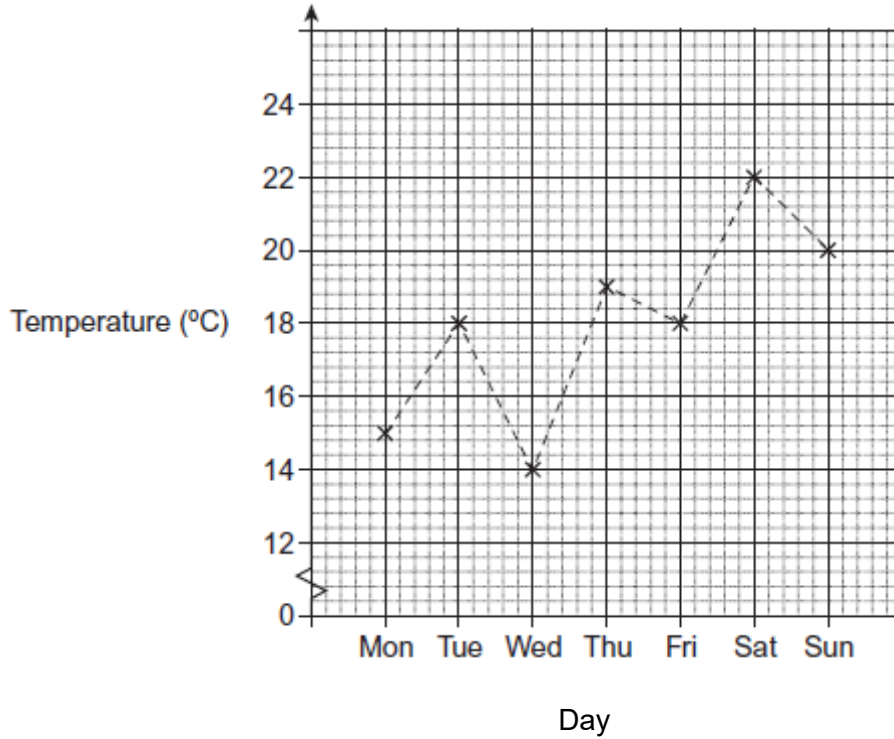
Is he correct?

You **must** show your working.

(Total 3 marks)

Q5.

The graph shows the midday temperatures in a seaside town for a week.



What is the range of the midday temperatures?

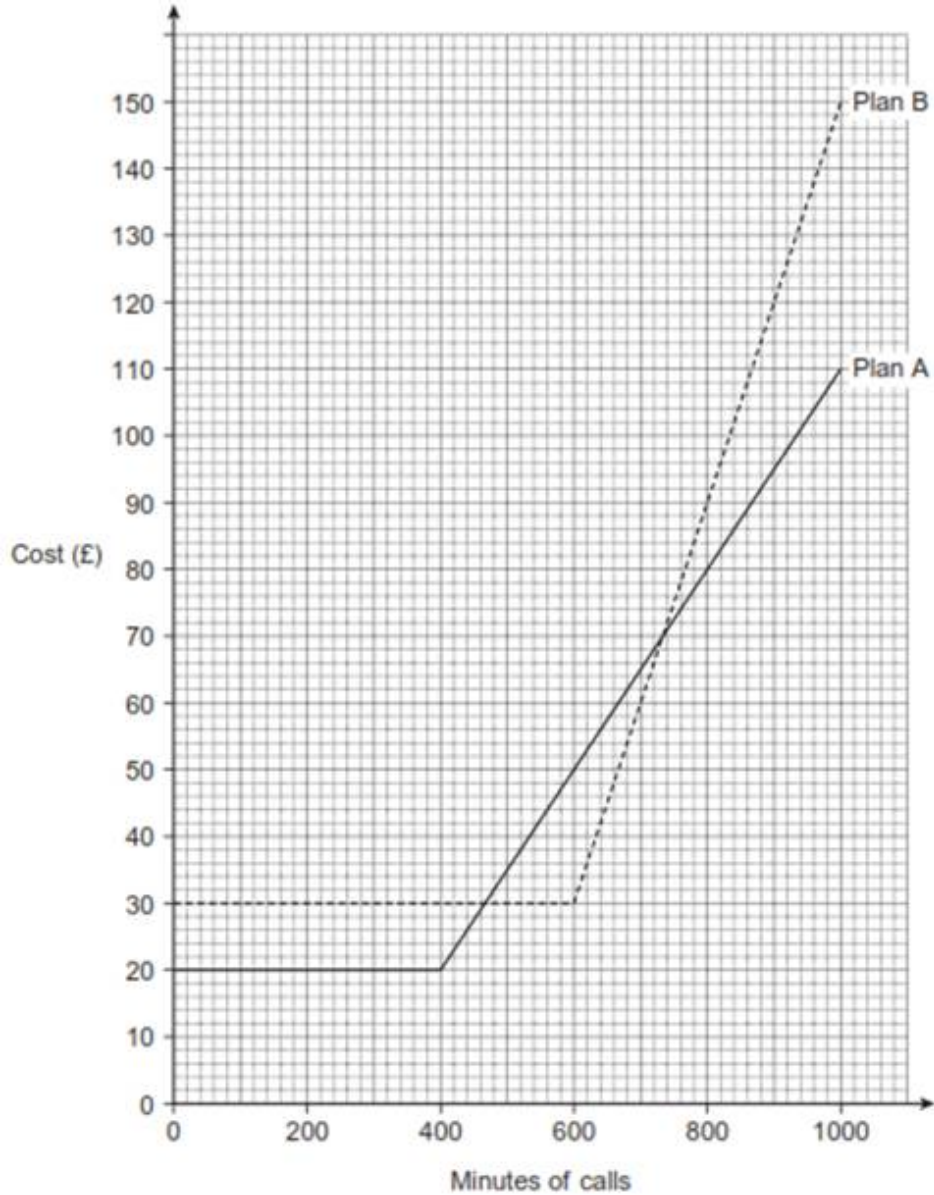
Answer _____ °C
(Total 2 marks)

Q6.

Plan A and Plan B are two monthly mobile phone plans. Here are the details of Plan A.

Monthly charge	£20
400 minutes of calls	Free
Each extra minute	15p

The graph shows the costs for both plans.



- (a) Ben usually makes about 800 minutes of calls a month.

Which plan should he choose?
Give a reason for his choice.

(2)

(b) Sarah chooses Plan B.

How much does she pay for each extra minute of calls?

Answer _____

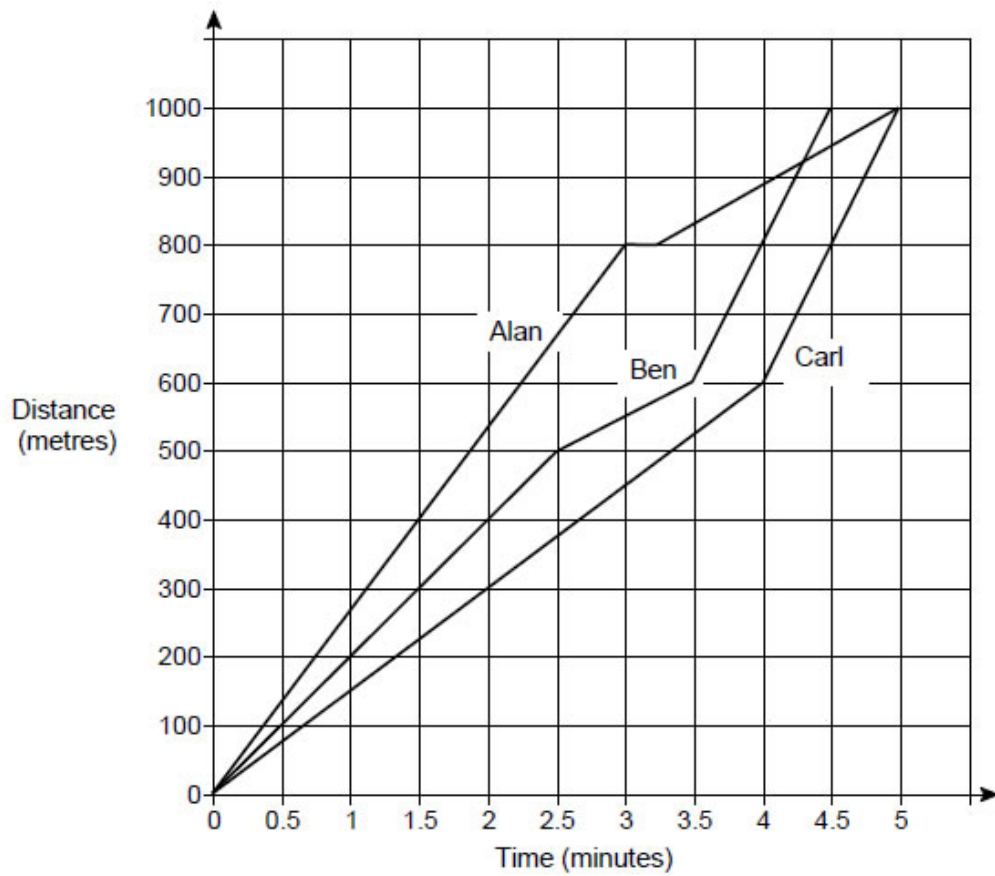
(3)

(Total 5 marks)

Q7.

Alan, Ben and Carl ran a 1000 metre race.

The distance-time graph shows the race.



(a) Who won the race?

Give a reason for your answer.

Answer _____

Reason _____

(1)

(b) Describe the race.

(4)
(Total 5 marks)

Calculator

Q8.

Alan is on holiday in France.

- (a) He sees this sign.

Paris	120 kilometres
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How many miles is this?

Use 8 kilometres = 5 miles

Answer _____ miles

(2)

- (b) He puts 48 litres of petrol in his car.

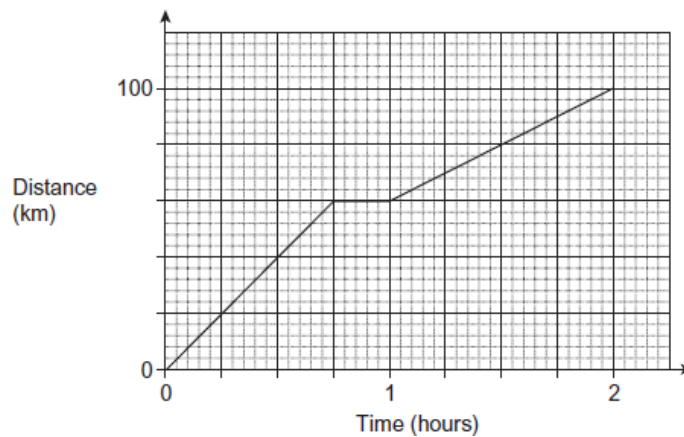
How many gallons is this?

Use 1 litre = 0.22 gallons

Answer _____ gallons

(2)

- (c) This graph shows a journey he made to the coast.



During the journey he stopped at a café.

For how long did he stop?

State the units of your answer.

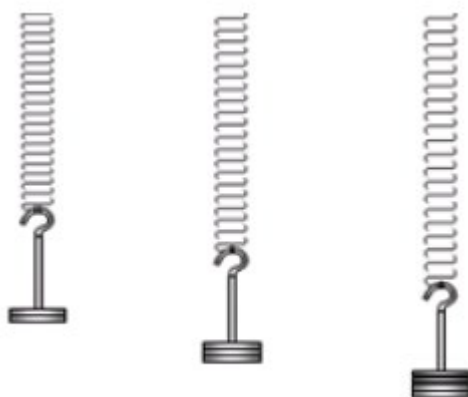
Answer _____

(2)

(Total 6 marks)

Q9.

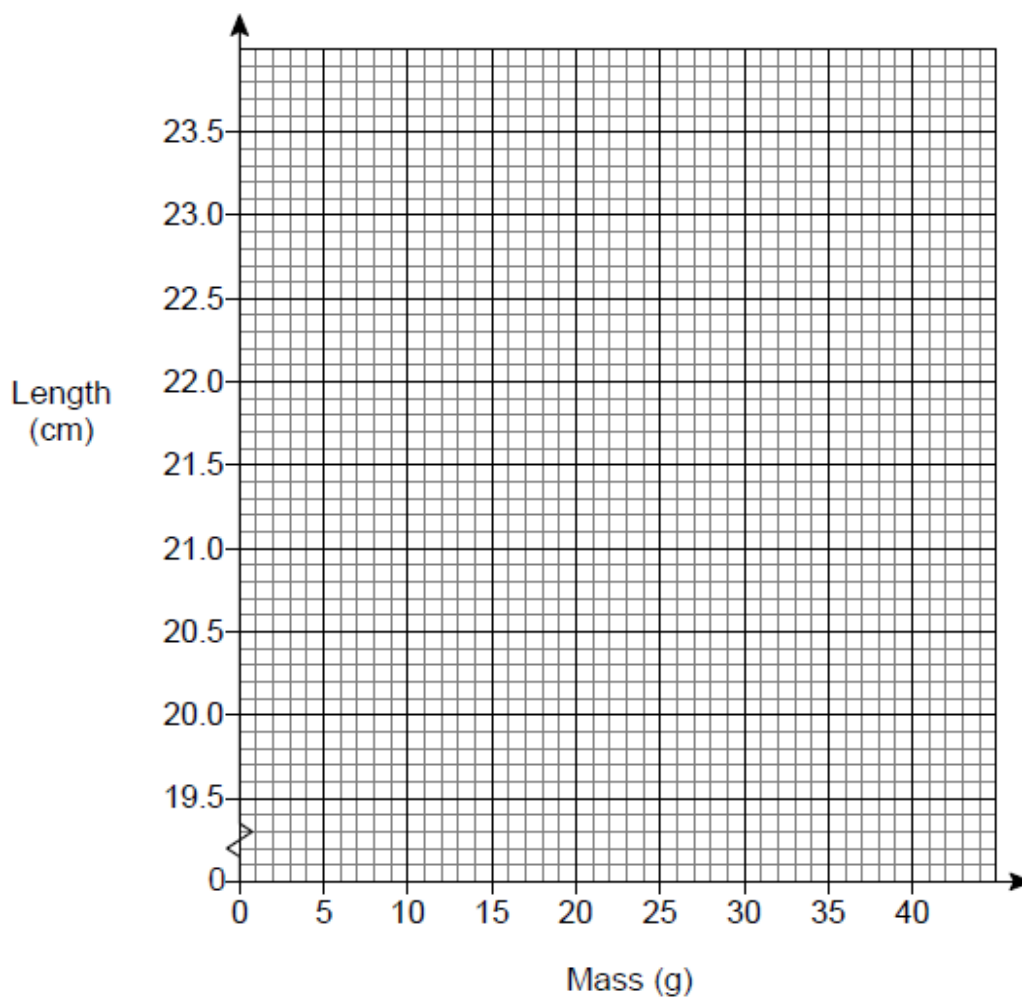
In an experiment, different masses are hung on a spring.



The length of the spring is measured for each mass.

Mass (g)	10	20	30	40
Length (cm)	20.8	21.6	22.4	23.2

(a) Draw a graph to show the length of the spring for masses from 10 g to 40 g



(2)

(b) Estimate the length of the spring with no mass hung on it.

Answer _____ cm

(1)

(c) How much longer is the spring with a 35 g mass than with a 15 g mass?

Answer _____ cm

(2)

(Total 5 marks)

Q10.

Lily goes on a car journey.

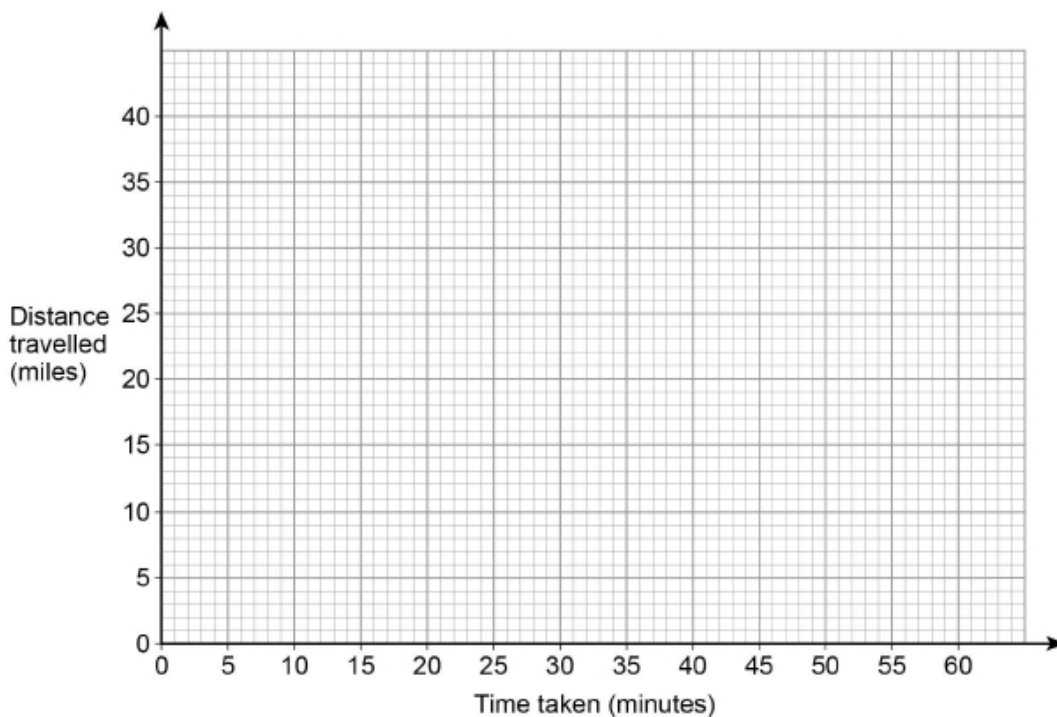
For the first 30 minutes her average speed is 40 miles per hour.

She then stops for 15 minutes.

She then completes the journey at an average speed of 60 miles per hour.

The total journey time is 1 hour.

(a) Draw a distance-time graph for her journey.



(3)

(b) Write down the average speed for the total journey.

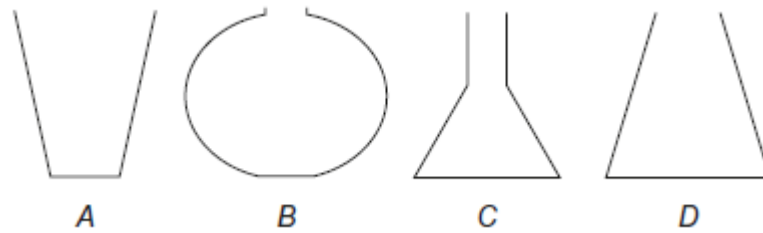
Answer _____ mph

(1)

(Total 4 marks)

Q11.

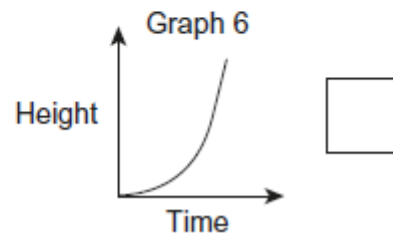
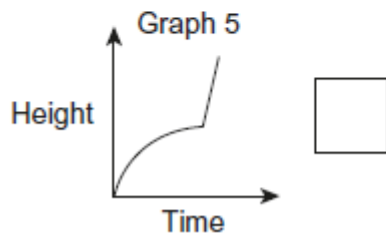
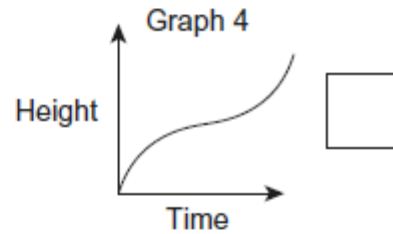
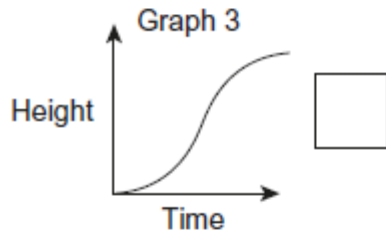
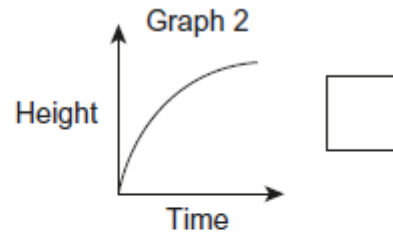
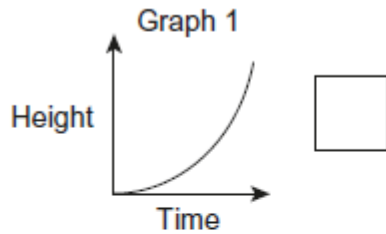
Four empty containers are shown.



Each container is filled with water at a constant rate.

Opposite are six graphs showing the height of water against time.

Write the letter of each container in the box next to its graph.
Leave the two remaining boxes blank.



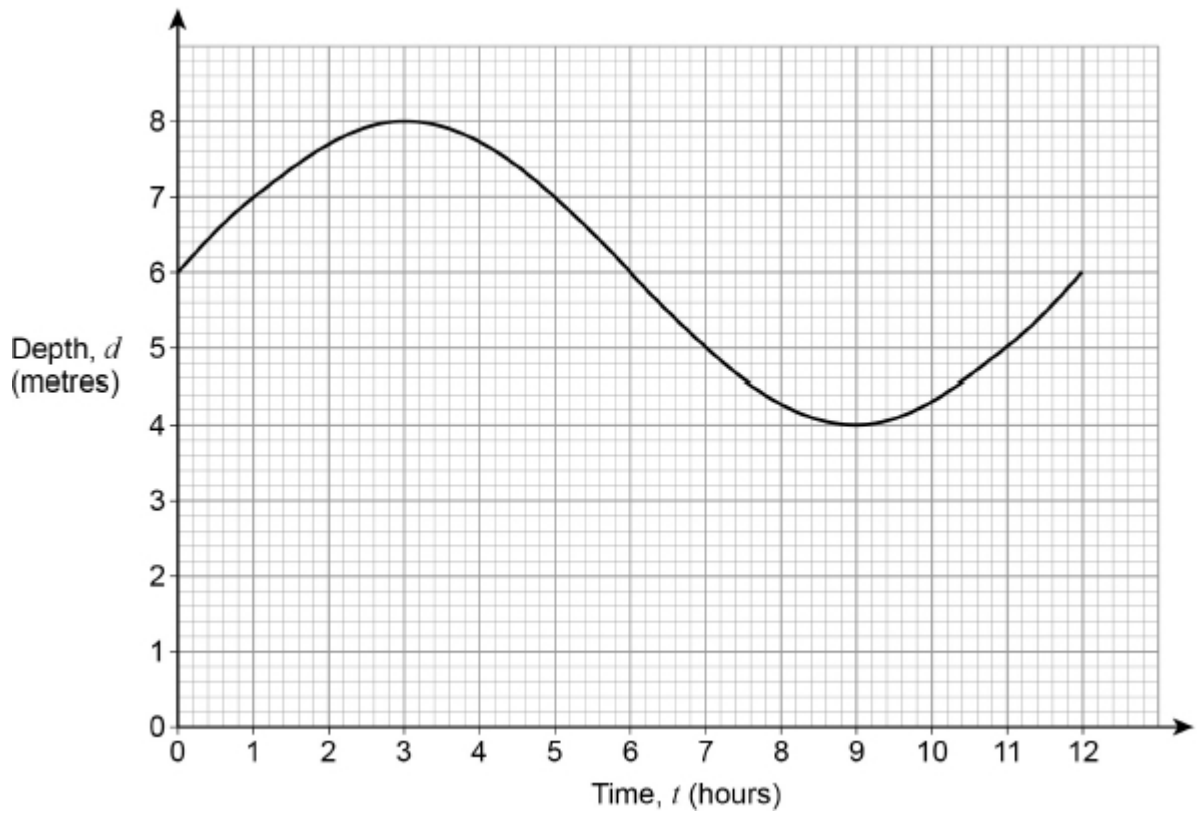
(Total 4 marks)

Q12.

The graph shows the depth of water in a harbour for 12 hours.

d is the depth of water in a harbour in metres

t is the number of hours after 9 am



- (a) For how many of the 12 hours is the depth more than 5 metres?

Answer _____

(1)

- (b) By how much does the depth change between 12 noon and 4 pm?

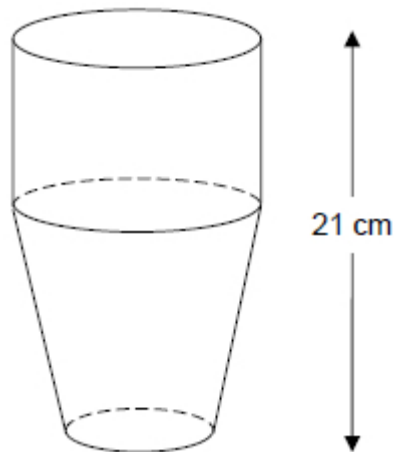
Answer _____ metres

(1)

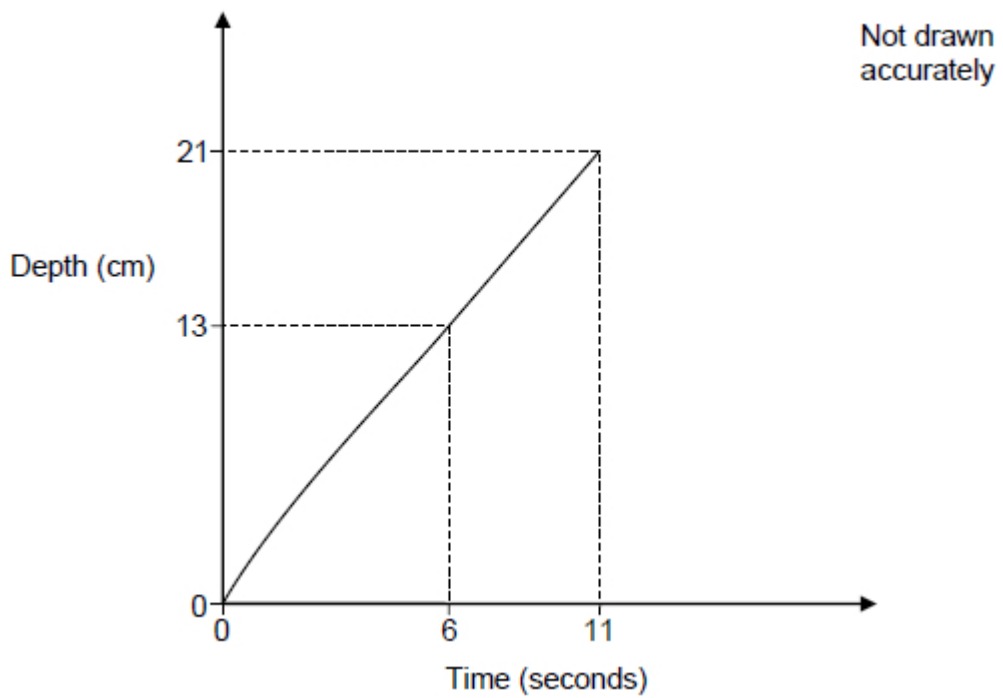
(Total 2 marks)

Q13.

The diagram shows an empty container of height 21 cm
The container consists of a cylinder on a frustum of a cone.



Water is added to the container at a constant rate for 11 seconds.
The sketch graph shows the depth of the water as the container fills.
The graph is a curve for the first 6 seconds and a straight line for the next 5 seconds.



(a) Circle the height of the cylinder.

- 8 cm 10.5 cm 13 cm 21 cm

(1)

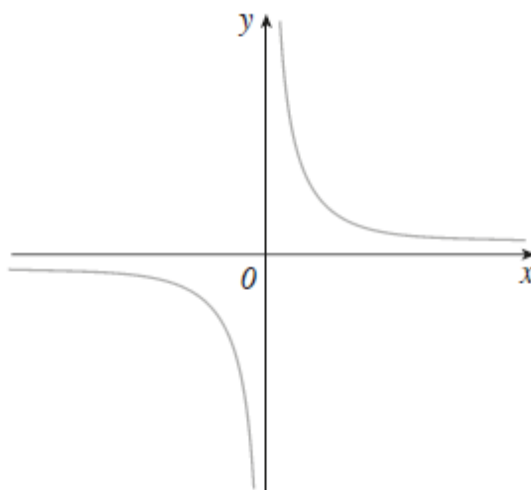
- (b) Work out the rate of increase of the depth of the water between 6 seconds and 11 seconds.
State the units of your answer.

Answer _____

(3)
(Total 4 marks)

Q14.

- (a) Circle a possible equation for the graph shown below.



$y = x^3$

$y = \frac{1}{x}$

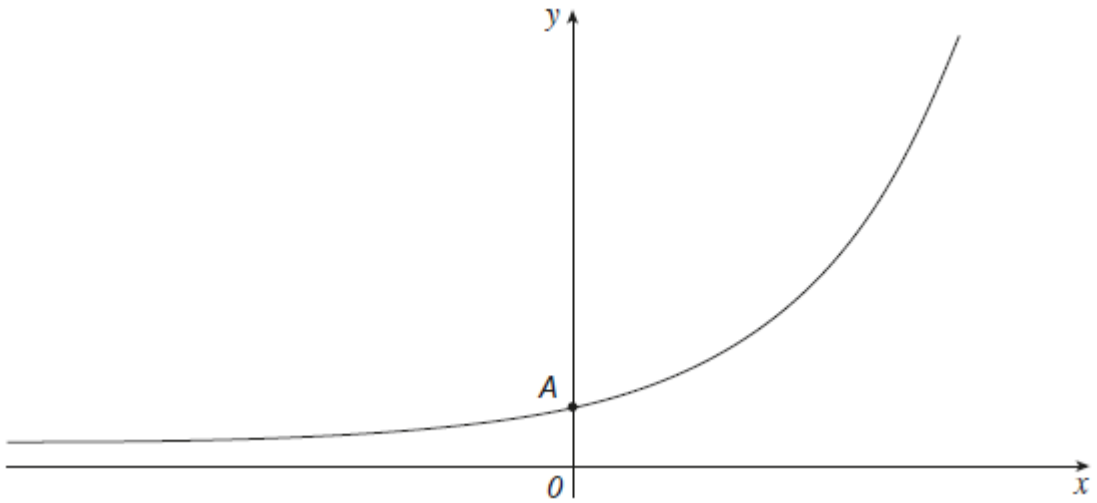
$y = \cos x$

$y = \sin x$

(1)

(b) This is the graph of $y = 2^x$

Write down the co-ordinates of A.



Answer (_____ , _____)

(1)

(Total 2 marks)